

PROJECTS UPDATE

HPA FIRST PROJECT STAGE 2

- Major civil works contract issued and works commenced
- Strong progress on offsite fabrication of long-lead equipment
- Large scale tank fabrication commenced

PRODUCT MARKETING

- Semiconductor sector demand continues to build strongly with Alpha delivering orders to 18 new potential customers this quarter to date
- Inbound demand driven by AI/data centres and power-semiconductor growth
- Test and sales orders growing strongly with >360 orders since FID (May 2024)
- Demand supported by Alpha's process advantages and production scale
- Successful development of ultra-high density (+3.9g/cm³) HPA tablets for a semiconductor sector end-user

PRODUCT SALES AND LETTERS OF INTENT

- Steady growth of sales and new sales order growth dominantly from the semiconductor sector
- As small-scale commercial sales and/or supporting final stage technical qualification
- Letters of Intent (LOI) are being progressively expanded as extended technical qualification completes
- LOI coverage of 63% of Stage 2 production, noting:
 - A further 5 LOI's in draft and under negotiation
 - An existing LOI under a negotiated volume scale-up
- Forward sales orders include sintered HPA tablets, HPA and ATH powder

HPA FIRST PROJECT STAGE 1

- Production focus on high purity Al-Nitrates and high purity ATH
- Stable production at +900kg/day Al Nitrate and 400kg/week ATH
- Continued HPA tablet production for Alpha Sapphire and external customers

ALPHA SAPPHIRE

- First sapphire wafer sales recorded a part of semiconductor qualification
- Remaining sapphire production for CY25 committed to sapphire optics customer

The Board of Alpha HPA Limited (**Alpha** or **the Company**) is pleased to provide an update on activities for the **HPA First** and **Alpha Sapphire Projects**, each representing the commercialisation of the Company's proprietary, exclusively licensed solvent extraction and HPA refining technology and production of critical high purity aluminium products into high technology markets. Alpha's ultra-high purity product capability includes:

- High purity aluminas (**HPA**)
- High purity alumina hydroxides (**ATH**)
- High purity aluminium nitrate precursors (**Al-Nitrate**), and;
- High purity synthetic sapphire glass

Alpha is in continuous production at its HPA First Project Stage 1, Precursor Production Facility (**Stage 1**) across the Company's full range of high purity aluminium materials and in construction of **Stage 2** of the HPA First Project. Stage 2 of the HPA First Project will be the world's largest, single site facility for the manufacture of high purity aluminium materials.

In addition, the Company is in study phase for the **Alpha Polaris Project**, being the next large scale commercial deployment of the Company's process technology.

HPA FIRST PROJECT

HPA FIRST PROJECT STAGE 2

Commencement of Major Civil Works

The major civil works (concrete construction) tender was recently awarded, with the successful contractor commencing site mobilisation. The Project engineering team has issued the first "issued for construction" (IFC) concrete drawings and site works now commenced.

Engineering will continue to focus on delivering IFC drawings in the coming months to the civil contractor, utilising their input to maximise efficiency in design and constructability.



Contractor Mobilisation and commencement of civil works

Engineering and Fabrication

The critical path for the project is running through engineering, specifically on structural steel and piping as the Project team continue to ramp up resources to fill out the detailed design. Offsite fabrication of long lead equipment has progressed steadily, particular for the key solvent extraction (SX) circuit (*refer images on following pages*).

Offsite fabrication of the major tanks package has now commenced. A local Gladstone engineering contractor has also been engaged to support early contractor involvement in site erecting of large tanks that will arrive in partially assembled sections for final erection on site.

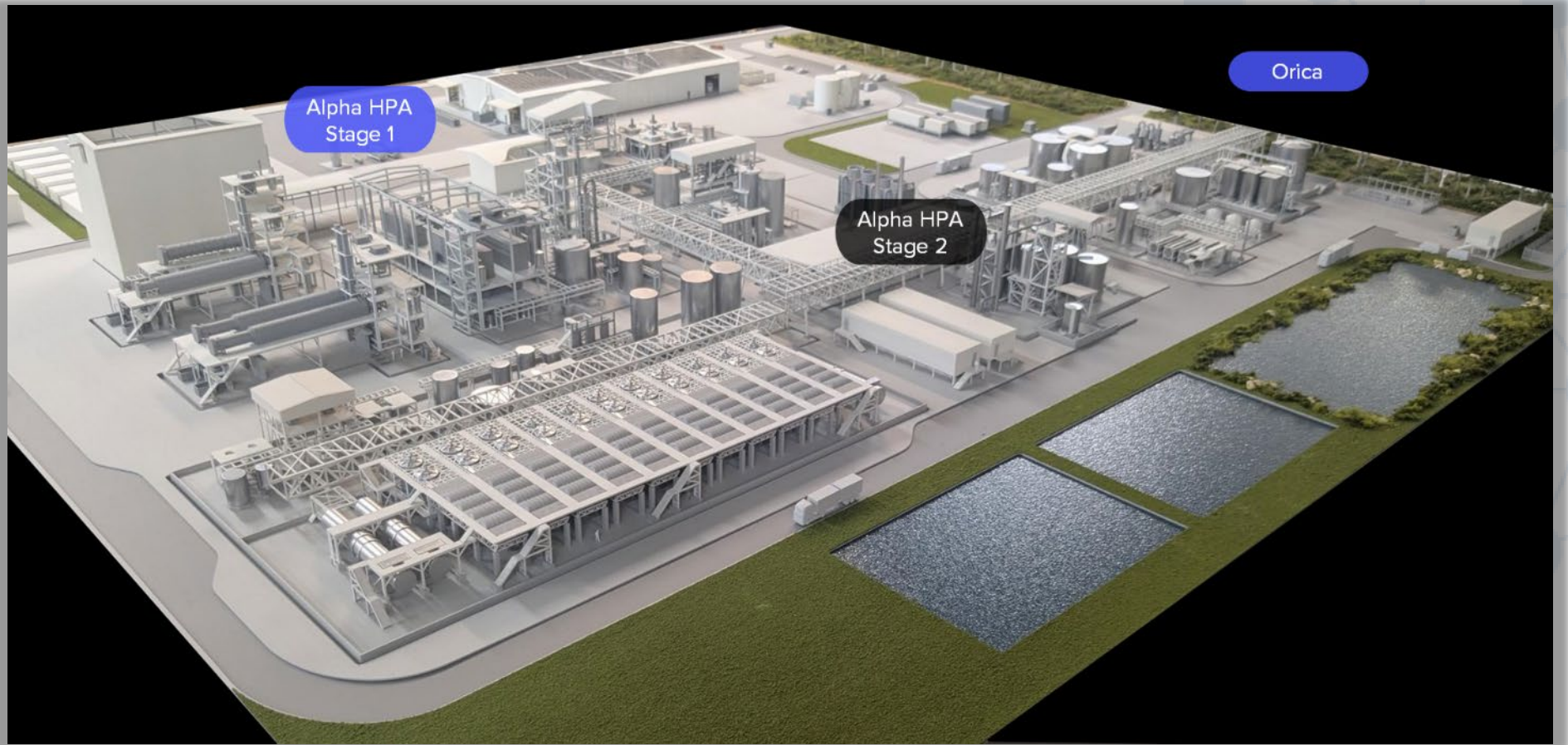
Project procurement has continued to advance with the steady issuance of the remaining plant equipment orders.

Operations Readiness

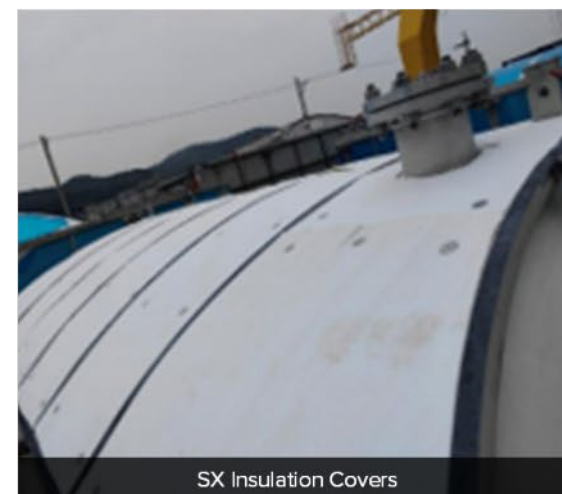
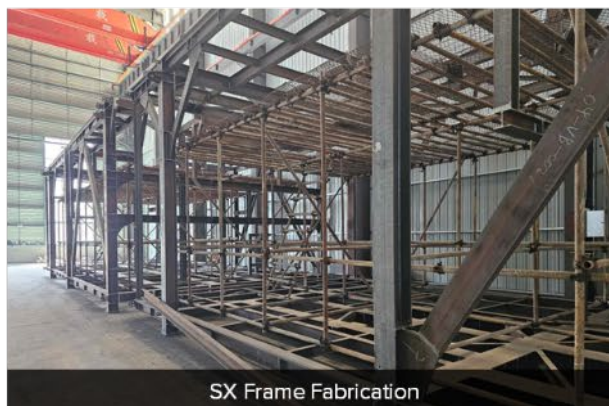
The operations readiness team is in the process of implementing a number of supporting plant systems that will support both start up and ongoing operations. Specifically, the maintenance management system, safety and environment management system and a commissioning handover system to ensure all systems are properly checked and verified before startup.



*HPA First Project site looking west, showing completed earthworks
Orica Yarwun in midground and Rio Tinto Yarwun alumina in far ground*



3D Model of final engineered layer of the HPA First Project



Selected images showing offsite fabrication of Solvent Extraction (SX) Modules

PRODUCT MARKETING

Overview

Alpha maintains a continuous global product marketing effort to secure the highest value end-user commitments to support each of its projects. The Company maintains a global network of marketing agents and an in-house sales and technical team. Product marketing is supported by test sample delivery and small-scale commercial sales from the Brisbane product development centre and the Stage 1 PPF facility in Gladstone.

Alpha's marketing effort is focused on new demand for new technology trends which match the Company's novel process capability including:

- HPA and ATH for the manufacture of spherical thermal interface materials (fillers) for parallel processing semiconductors (Data Centres & AI)
- HPA for CMP polishing of Silicon-Carbide (SiC) semiconductor substrates and hard-carbon packaging
- ATH for direct lithium extraction (DLE) sorbents
- Al-Nitrates for battery coatings

Recent marketing activity includes:

- Multiple end-user visits to China, Japan and South Korea during late March and May and the US in June
- Consolidation of strong demand signals and end-user qualification from the semiconductor sector
- Continued strong build up in qualification test orders, now at >360 since May 2024
- Steady and continued build in sales and forward sales orders

Although the qualification process and timeline varies by sector and end-user, the common elements of qualification include:

- Conducted under NDA (over 80 end-user NDA's in place)
- Qualification is technically-led evolution from small, free-issue samples (1-2kg) to production scale testing, generally as commercial sales (100kg to 1,500kg)
- End-users are generally undergoing a parallel qualification downstream with their own customers
- End-user value commitment during qualification is typically >US\$1M
- Qualification timeline 12 months to 3 years with pricing discussions back-ended once material performance is determined
- Successful qualification will typically catalyse a Letter of Intent (LOI) or equivalent. LOI's are generally structured as a mutual commitment from Alpha to reserve and supply materials volumes and the end-user providing an intent to purchase.
- LOI forms the key terms for supply contracts
- The mutual price and time investment of the qualification based supply process builds a supply 'moat' and is an effective removal of price volatility

LOI Status

Alpha has secured LOI coverage of ~62% of the Stage 2 production capacity, which are now the basis for commercial sales contracts. In each case the LOI commitment has followed extensive end-user qualification test work and parallel end-use qualification with their downstream end-users.

In addition to the existing customer LOI's in place, Alpha is in active negotiation, with;

- A further 5 end-user LOI's under draft and
- A significant volume demand expansion of an existing LOI with a customer manufacturing thermal fillers for AI/Data centre semiconductors

Product Sales

Product sales continue to build from the Stage 1 PPF as Alpha consolidates its position as a reliable, high-quality supplier to the semiconductor sector. Recent orders include:

- 3 x 100kg of a bespoke gamma alumina (Ultra GAP-X)
- 500kg of densified HPA tablets
- 1,500kg of milled ATH
- 100kg of amorphous ATH



500kg Sintered HPA tablet order



1,500kg milled ATH order

Development of ultra-high density HPA tablets for a semiconductor sector end-user

Alpha has recently successfully developed an ultra-high density ($+3.9\text{g/cm}^3$) HPA tablet at 5N purity using one of the Company's specialised aluminas as a tablet feedstock. The development was made at the request of a semiconductor end-user who utilises high density HPA tablets as feedstock to machine high-end machinery parts used in semiconductor fabrication (eg: electrostatic chucks). Test samples have now been sent to the end-user for qualification

Alpha technology advantage

As set out in detail the Company's March quarter activities report, Alpha's product development and marketing continues to consolidate what the previous 4+ years has clarified as the four discrete applications where Alpha's process technology holds a clear advantage over competing manufacturing technologies and/or competing suppliers.

This matrix has been updated below:

SECTOR	SEMICONDUCTOR		DLE	LITHIUM-ION BATTERY
USE	THERMAL FILLERS	CMP	DLE SORBENTS	COATINGS
PRODUCTS	Alumina and ATH materials as spherical 'heat sinks' to manage temperature in high performance parallel processors (AI data centres)	Alumina abrasives for polishing silicon carbide substrates (Si-C) and package polishing	ATH ($\text{Al}(\text{OH})_3$) as a precursor to make DLE sorbents for extracting lithium from brines	High purity Al-Nitrate as coating precursor to apply Al-based coating on anode materials
A4N ADVANTAGE	End-users have noted Alpha is the only global supplier capable of providing <1ppb U and Th materials for 'low-alpha' thermal interface fillers	Novel process delivers ultra low alkali metals impurities (Na & K) and morphology driving out-performance as a CMP abrasive	Novel process delivers unique amorphous ATH crystal structure = ULTRA-HIGH PERFORMANCE	Alpha HPA is the first company globally to manufacture 5N purity aluminum nitrate MAJOR SAFETY BENEFIT
ALLOCATION	1,720tpa under LOI (2 OEM's) Qualifying with 8 x other Premium pricing ~ US\$22 – 35/kg Est. unmet demand: +5ktpa	4,000tpa under LOI 2 x LOI's in draft Small scale sales commenced Qualifying for 12 x other Strong pricing ~US\$20-30/kg Est. unmet demand: 10kt	LOI in draft Qualifying with 14 x counterparties Moderate pricing Est unmet demand: +25ktpa	Qualified with a sector leader 2 x LOI + quotation in draft Moderate pricing (strong in HPA Eq) Est unmet demand: +10ktpa

HPA FIRST PROJECT - STAGE 1

Production

Stage 1 capacity continues to be fully utilised servicing customer sales and customer qualification test orders with a current strong focus on high-purity Al-Nitrates, ATH and densified HPA tablets, servicing customers in the battery, semiconductor and sapphire glass (optics) sectors.

Under this configuration, Stage 1 is currently producing:

- +400kg/ week of ultra-high purity (+99.997%, or +4N7) ATH powders
- +900kg/day of (+99.999%, or 5N) Al-Nitrate crystal
- +300kg/week of (+99.999%, or 5N) HPA tablets manufactured from the Stage 1 HPA inventory

The Stage 1 Facility continues to be fully utilised, dominantly servicing test and sales orders for ATH for the semiconductor sector. The Stage 1 facility is fully booked from sales orders through to 30 June 2025, with customer requests currently exceeding Stage 1 production capacity.

Expansion Options

As reported in the March quarterly, in response to increasing customer demand for 2025 and 2026 the Company is reviewing a number of additional zero-cost to low-cost expansion options for Stage 1 to increase production rates of selected materials to meet higher customer demand before larger volumes are available from Stage 2 production.

ALPHA SAPPHIRE



Alpha Sapphire is a wholly owned subsidiary of Alpha HPA that has invested in an initial two, next-generation sapphire glass growth units (**Phase A**) as qualification units prior to decision on the commercial scale deployment of synthetic sapphire growth (**Phase B & Phase C**).

The Phase A units are currently running multiple sapphire growth runs using the Company's in-house high-purity alumina feedstock to provide synthetic sapphire for sales and end-user qualification.

Sapphire Marketing Update

Alpha Sapphire has been engaging with the synthetic sapphire end-use market since establishing maiden sapphire growth in May 2024.

Marketing has been focused on the following end-use markets:

- **Optics:** Being sapphire glass utilisation in medical devices, watches and consumer electronics. During the quarter:
 - Alpha Sapphire continued sales of sapphire boules to a counterparty in the production of ESG credentialled sapphire for their premium watch face customers.
 - Alpha Sapphire reached conditional agreement on the sale of a further 2 metric tonnes of sapphire boules over the remainder of calendar 2025.
- **Semiconductors:** Alpha Sapphire is responding to a number of inbound enquiries of new sector demand from a number of large semiconductor counterparties developing next generation Gallium-Nitride (GaN) -on-sapphire semiconductor platforms. GaN-on-sapphire, is an emerging semiconductor technology for high power and high-frequency devices. GaN-on-sapphire semiconductors are grown on wider format (8") C-plane sapphire wafers and are considered an excellent match to the capabilities of Alpha Sapphire's sapphire growth units which are optimised for wide-format C-axis sapphire growth.

In the last month, Alpha Sapphire:

- Completed 200mm sapphire wafers delivered to and payment received from a major global semiconductor OEM for GaN-on-sapphire qualification
- Hosted a site visit and received a formal approach from an existing sapphire optics customer to purchase >100% of forecast 2026 sapphire production



Cassette of completed 8" (200mm) sapphire wafers for GaN-on-sapphire semiconductor end-user (RHS)

Sapphire Growth

The continuous sapphire growth quality improvement program continued over the last month, including

- A refined HPA feed blend
- A major reduction of internal bubbles and cloud zones
- A major reduction in low-angle-grain (LAG) zones
- Successful removal of molybdenum contamination and
- Successful implementation of software controlled crystal seeding

The most recent sapphire growth runs have recorded the highest quality sapphire growth to date in terms of very minor internal imperfections, expected to continue to increase the yield and payability on completed sapphire

Phase B Feasibility

Lease documentation has now been exchanged for the Phase B site in Brisbane. The site will also house Alpha's Brisbane administration, the Product development centre, and eventually the full Stage 2 Project team. The site relocation will begin in the first week of August.

For further information, please contact:

Robert Williamson
Managing Director
rwilliamson@alphaHPA.com.au
+61 (0) 407 125 175

Robert Lord
Investor Relations
rlord@alphaHPA.com.au
+61(0) 400 008 553

Rimas Kairaitis
Executive Director & Chief Commercial Officer
rkairaitis@alphaHPA.com.au
+61 (0) 408 414 474